sponsored schemes with other poverty alleviation programmes implemented in the State for effective rehabilitation of identified bonded labour. The number of bonded labours indentified, released, rehabilitated and Central assistance provided to States during the last three years State-wise are given below:

(Rs. in lakhs)

Year	State	No. of Bonded Labour identified, released and rehabilitated	Central Assistance provided to States for Rehabilitation
2002-03	Maharashtra	5	0.50
	Punjab	69	6.90
	Karnataka	1854	185.40
	Chhattisgarh	124	12.40
	Haryana	21	0.11
	Bihar	125	12.50
2003-04	Bihar	314	31.40
	Uttaranchal	5	0.50
	Uttar Pradesh	398	39.80
	Andhra Pradesh	1699	169.90
	Orissa	39	3.31
	Rajasthan	10	1.00
2004-05	Madhya Pradesh	265	16.91
	Bihar	281	28.10
	Orissa	19	1.90
	Uttar Pradesh	41	4.05
	Karnataka	64	6.40

Research to forecast Tsunami

425 SHRI RAJKUMAR DHOOT: Will the Minister of OCEAN DEVELOPMENT *be* pleased to state:

(a) whether it is a fact that Integrated Coastal and Marine Area Management (ICMAM) scientists carried out extensive studies after Tsunami havoc of December, 2004;

(b) if so, the details therof;

(c) whether any scientific study or research has been carried out to forecast Tsunami and the areas prone its aftermath; and

(d) if so, the details thereof and if not, the reasons therefor?

THE MINISTER OF STATE OF THE DEPARTMENT OF OCEAN DEVELOPMENT (SHRI KAPIL SIBAL): (a) and (b) The scientists at Integrated Coastal Marine Areal Management (ICMAM) Project Directorate of Department of Ocean Development (DOD) have measured the run-up levels (maximum land elevation upto which sea water reached) and inundation limits (horizontal distances from the coast upto which sea water reached) during the Tsunami that occurred on 26th December, 2004. The run up levels are useful in determining the safe locations for human settlement along the coast and also to validate models used in prediction of inundation of sea water on the land during Tsunami that may occur in future. The run up levels have been measured at a few locations in Andaman, Nicobar, Great Nicobar, Nagapattnam and Chennai coast. The data collected has indicated maximum run up levels of 7 m in Car Nicobar, 4.4.m in Nagapattnam and 3.5m in Chennai. The inundation limits varied from 45m to 1.2 km along Andaman, Nicobar and Tamil Nadu coasts.

(c) and (d) The run up data has indicated the vulnerability of low lying areas to tsunami waves. It has been proposed to set up a Tsunami and Storm Surge Early Warning System with the following components.

* Strengthening of the existing seismologicai network to indicate in near real time occurrence of tsunamigenic earthquakes.
* Installation of tsunami warning sensors close to the ocean bottom at appropriate locales in the Indian Ocean with real time connectivity.
* Tide gauge and data buoys networking.
* Modelling of the inundations scenarios for the entire coast.
* The establishment of a centre for collection of information analysis and generating status advisories.

A component of the proposed Early Warning System comprises studies for forecasting of tsunami waves different magnitude earthquake scenarios. The results obtained will indicate the areas vulnerable to tsunami waves depending on the source parameters.